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Looking for the Harappan Ports around Dholavira, Khadir Bet, Kachchh, Gujarat

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The rise of Harappan settlement at Dholavira is attributed to multidimensional factors which may include industrial activities, overseas trade and commerce and distribution of resources available in the Kachchh to other parts of the Harappan domain. The very location of the site is highly intriguing because presently the area is surrounded by marshy land which is called as Rann of Kachchh. However, various studies have indicated the different environmental and morphological conditions in the area and have been suggested that during Harappan time Rann was navigable. Though there is a remote possibility of any port installation close to ancient Dholavira town but a few potential sites in the proximity such as Jhandiasar, Saran and Bambhanka might have played a decisive role in the rise of Harappan settlement at Dholavira. The present study is based on the preliminary surface exploration undertaken in the recent past at above-mentioned sites.

[Keyword: Ancient ports; Harappan settlement; Rann of Kachchh; Overseas trade]

Introduction

The archaeological explorations in the sixties brought to light a large number of Harappan settlements in Kachchh region, facilitating for further investigation on the settlement pattern and cause of these settlements. The archaeological material suggests that some of these settlements took place in the late fourth and the early third millennium BC. Thus the expansion of Harappan civilization happened at early stage towards the southern region particularly in Kachchh and Saurashtra region which was the reason for rise in prosperity of this civilization. Since, the southern region of the civilization has more than 2000 km coastline (if Rann is considered as the palaeo sea), Harappan must have utilized the available resources and developed overseas trade centers in this region¹.

The large Harappan settlement at Dholavira (23° 55' N; 70° 13' E) provided an ample opportunity to look for several potential sites around it which might have provided feeding support to this settlement on the island. These could be in the form of the food economy, raw material resources for construction and in turn their utility in developing the industries. However, in the present communication, the focus is on the water transportation which would have been a crucial area that could have facilitated the extraordinarily rise of this site.

Description of the sites in Khadir Bet, Great Rann

Khadir Bet an island is situated in the Great Rann, and the nearest point to the mainland is 5 km on the east of the island. The island is about 200 sq km area and is extended east-west direction in an inverted triangle shape. The island is tilted towards south, thus on the northern shore sharp and high cliff formed which rises to a height up to 125 m above the Rann. The other three sides the land fans out and gently slopes down towards the Rann and thus determines its semi-radial drainage pattern on the habitable back slope while radical on the whole. The geological formation of Khadir Bet mostly consists of sandstones with conglomerate claystone, laminated siltstone and fossiliferous limestone² and is covered along the margins with the Quaternary sediments which gently merge with the surface of surrounding Rann². There are several highs and lows in the back slope, the later being covered with cultivable soil derived from limestone or sandstones. The Harappans extensively exploited these geological sediments by quarrying over three million cubic of earth and rock for raising diverse construction and fabricating an enormous amount of pottery and miscellaneous artifacts mostly for local consumption and partly for export³ (Bisht, 2015).

Archaeological sites in Khadir Bet

The Topo-sheet of the area (NF 42-3, Series U502, US Army, 1955) suggested 9 locations as possible

archaeological sites which have been shown as deserted area. One of the locations Kotada (present Dholavira Harappan site) has been excavated extensively in the recent past. For the purpose of this paper, our interest is focused on the coastal sites of the island which might have played a decisive role in the growth of Dholavira city. As per excavations of the site of Dholavira, the settlement itself may not have its port in and around habitation area. As has been mentioned at several places⁴ the city of Dholavira was planned over an undulating land between two seasonal streams known as Mansar and Manhar. Interestingly, Harappans exploited the best possible way to channelize the water flow of these streams in the artificially created tanks in the stream itself⁵. These findings suggest that seawater may not be reaching up to Dholavira even during the highest high tide (maybe 1 km from the coast during Harappan times). Therefore, one needs to look into other potential areas which might have served as a port. During the exploration, following sites were visited and their location with respect to the coast of the island was ascertained by plotting on the map (Fig. 1).

1. Jhandiasar ($23^{\circ} 53' \text{ N}$, $70^{\circ} 11' \text{ E}$)

The site is situated about 2 km north of Dholavira archaeological site on the way to fossil park. The site is just on the south bank of the seasonal rivulet which runs through the Rann of Kachchh at a distance of about 1 km. During the exploration, a few stone structures were visible on the surface which includes walls and a few square structures (Fig. 2). Though, no other archaeological artifacts were found in the course of exploration but was informed by the owner of the land that a few years ago some stone beads and chert blades were collected from the surface (as majority of people of this island are aware on the nature of Harappan antiquities as they worked as laborer at Dholavira for a long period). The location favours as a potential harbor and stone must have been transported in building Dholavira fortress.

2. Bambhanka ($23^{\circ} 49' \text{ N}$, $70^{\circ} 19' \text{ E}$)

A small Harappan site is situated on high table land and down a seasonal rivulet which merges with the sea at a distance of 2.5 km at present. The site is located about 15 km south of Dholavira metropolis.

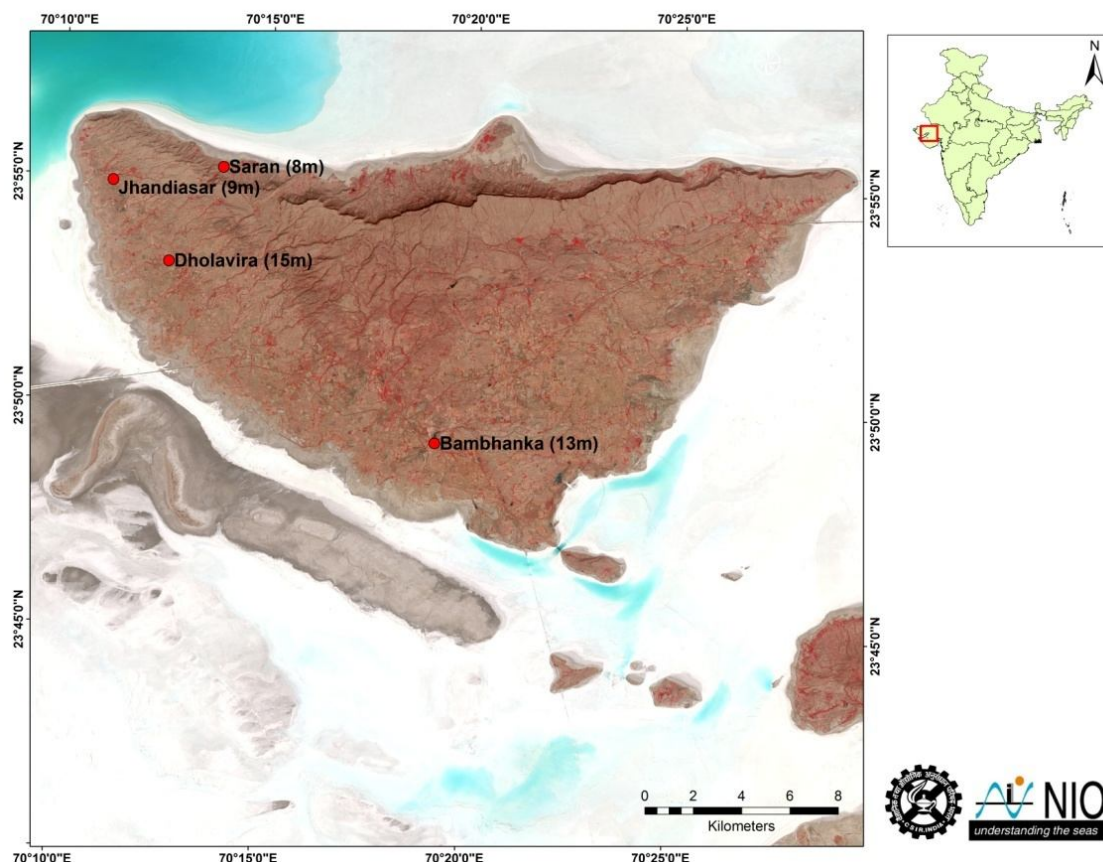


Fig. 1 — Location of the sites in Khadir Bet

The archaeological material comprised a series of stone structures running in the east-west direction (Fig. 3). Since no excavation has been conducted at this place, it is difficult to determine the depth of buried structures. Besides, a small quantity of pottery and other antiquities like chert blade and semiprecious stone beads were noticed during the surface collection. The height of small settlement is 13 m from mean sea level (MSL), however, very close to the site, a river bed is just 5 m above MSL. The site might have served as the potential port site for transporting raw material like building stone for construction in the ancient town of Dholavira.

3. Saran (23° 55' N, 70° 13' 50" E)

A small Harappan site was noticed in 1990 on the northern shore of Khadir Bet⁶ (Rao, 1992) which is about 4 km north of the Harappan site of Dholavira. However, through coastal route, it is about 14 km from Saran coast to Dholavira coast. The site is on



Fig. 2 — Jhandiasar on a seasonal stream about a km from the Rann and about 4 km north of Dholavira site.



Fig. 3 — Bambhanka on a seasonal stream about 15 km south of Dholavira site

the left bank of a seasonal rivulet approximately 300 m upstream. The remains of a large rectangular building in east-west orientation are found on the flat top of the outcrop (Fig. 4). This structure may have been serving as a warehouse for temporary storage of the goods. Structural remains include a row of nine small rooms set along its northern wall, which was possibly fronted with large verandas. At the eastern end, the building had three small rooms. Archaeological investigations yielded very few potsherds belonging to the Late Harappan assemblage. The height of its walls measures 0.53 m to 0.80 m with a width measuring 0.70 m⁷ (Rawat, 2015). The lateral walls of the building on east and west were extending on the slope up to the rivulet below perhaps to create a large open enclosure. The western wall which is traceable up to a length of 18 m may have been terminating at a broad platform of approximately 8 sq.m located right on the bank of the river. The enclosed area also seems to be further partitioned into two divisions by a north-south wall. The platform on the bank of the estuary appears to be meant for loading and unloading cargo. The building was located at an altitude of 8 m above the mean sea level (MSL). The present bed of the rivulet is about 6 m below the base of the building and approximately 1.5m above the present surface of the Rann. If assumed that the Rann was an extension of the sea and was 4 m deep during the Harappan time and sea level would have been 1 to 2 m higher than what is today, then water with 6 m deep could have been sufficient to bring the vessels to the platform through the estuary. Further, the estuary should have been preferred as a secured mooring place to avoid the disturbance caused by the sea storms.



Fig. 4 — Archaeological remains at Saran on the northern coast of the island about 3.5 km from Dholavira site.

Discussion and Conclusion

All three sites are very small in size and comprised of some structures visible above the surface. No significant antiquities or pottery have been found from any of these sites. During our underwater exploration all along the Saurashtra coast⁸⁻⁹ no pottery or any other antiquities except stone anchors have been found from port sites. Since the types of anchors are not known from the Harappan period, one may not expect anything other than some structures on the coast, and that is precisely the situation at all these places one can notice. Therefore, it may be assumed that these sites must have served as a potential Harappan port during the 3rd to 2nd millennium BC and might have played an essential role in transporting the building stones of Dholavira fortress during Harappan times. Law¹⁰ has studied the various type of rocks found at different sites, and suggested that banded limestones found at Mohenjo-Daro and Harappan must have been transported from Khadir Bet to these respective places which are at more than 500 and 1000 km upstream of the river Indus from Khadir Bet. Considering the Rann

as the palaeo sea¹¹ the limestone from Khadir Bet must have been transported through the sea and riverine route to Mohenjo-Daro, Harappa and other sites of the Indus Valley Civilization. The geological studies have also indicated that Rann was navigable as late as 500 yrs before¹²⁻¹³. Studies on palaeo sea level have suggested that during mid-Holocene sea level was higher than today¹⁴⁻¹⁵. If that is taken into consideration, then all above-mentioned sites were very close to the coast and must have served as the potential harbor for transporting stones and also fishing for the large population of Dholavira town. Digital Elevation Model (DEM) generated from Shuttle Radar Topographic Mission (SRTM) showed the recent elevation values of the sites and the distance from the present shoreline could be identified. After increasing the sea level to 5 m than the present level, DEM has shown the inundation limits, and the said sites are in proximity to the waterline (Fig. 5). This analysis indicates that 5 m elevated water level in the past could have surely allowed the water transportation to the port site. DEM study of the area suggests that port sites are

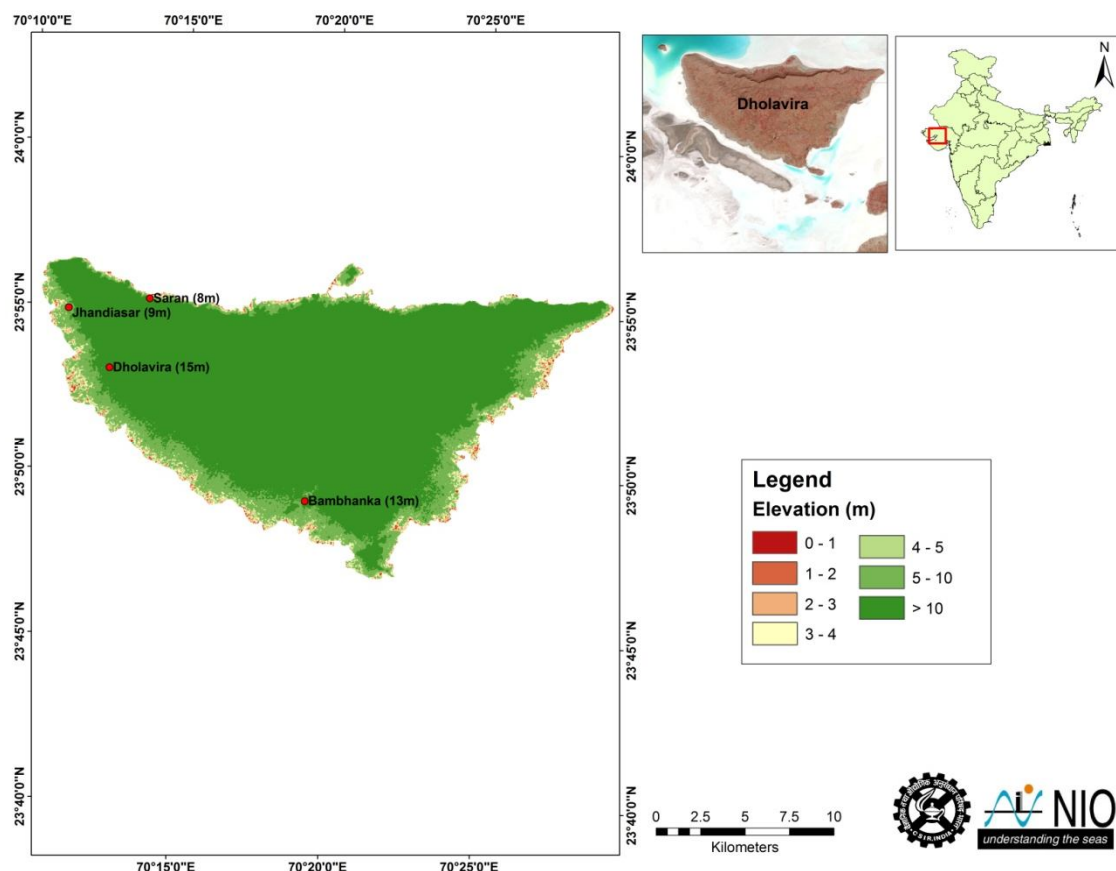


Fig. 5 — Digital elevation map of Khadir Bet showing the location of archaeological sites discussed. Sites are located within the proximity of 4-5 m elevation.

located close to a height of the land around 5 m whereas the ancient metropolitan city of Dholavira is situated above 10 m elevated land. This analysis clearly favours the higher sea level during the Harappan time. Two types of stones were used in the construction of Dholavira town, one with nicely chiseled for the external finish and the evidence for the quarry of the same has been recorded while on the way to Saran. Rock being sedimentary in nature, the flaking occurs linearly and thus allows the use of these stones in the construction of walls which perhaps were efficiently used by the Harappans at Dholavira. In the construction of Dholavira town, thousands of tons of stone must have been used which would have been supplied from different locations in the Khadir Bet. Thus, the sites mentioned above might have been the potential locations for the extracting the stone and transporting the same to Dholavira via water transport. As per archaeological records, the site evolved over a long span of time. Thus, these port sites must have played a very significant role in the growth of Dholavira as a metropolis of Harappans in Kachchh.

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